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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/992,137	11/14/2001	Ronald Hilton	AMDH-08155US0 DEL	4654

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EXAMINER	
SAXENA, AKASH	
ART UNIT	**PAPER NUMBER**
2128	

DATE MAILED: 07/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/992,137	HILTON, RONALD	
	Examiner	Art Unit	
	Akash Saxena	2128	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 November 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-21 have been presented for examination based on the application filed on 14th November 2001.

Drawings

2. The drawings are objected to because of the following:

Fig.1: "Executable code 11" in the specification [0026] is not present in the drawing Fig.1. The executable code 10 is present in the drawing Fig.1 seems to be misnumbered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

3. Applicant is reminded of the proper language and format for an abstract of the disclosure. Abstract of the instant application is 173 words long.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

1. Claims 1-10 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Regarding Claim 1

Claim 1 is non-statutory, as a human being could manually perform the steps defined in the method above. MPEP 2111 states:

> In re Prater, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550-51 (CCPA 1969) (Claim 9 was directed to a process of analyzing data generated by mass spectrographic analysis of a gas. The process comprised selecting the data to be analyzed by subjecting the data to a mathematical manipulation. The examiner made rejections under 35 U.S.C. 101 and 102. In the 35 U.S.C. 102 rejection, the examiner explained that the claim was anticipated by a mental process augmented by pencil and paper markings. The court agreed that the claim was not limited to using a machine to carry out the process since the claim did not explicitly set forth the machine. The court explained that "reading a claim in light of the specification, to thereby interpret limitations explicitly recited in the claim, is a quite different thing from reading limitations of the specification into a claim,' to thereby narrow the scope of the claim by implicitly adding disclosed limitations which have no express basis in the claim." The court found that applicant was advocating the latter, i.e., the impermissible importation of subject matter from the specification into the claim.)

Further, these method steps can be performed on paper, as the disclosed algorithm is not associated directly the computer arts. Hence the claim is deemed non-statutory by the examiner. See MPEP 2106: Computer Related Inventions

> A process that merely manipulates an abstract idea or performs a purely mathematical algorithm is nonstatutory despite the fact that it might inherently have some usefulness. In Sarkar, 588 F.2d at 1335, 200 USPQ at 139, the court explained why this approach must be followed:
> No mathematical equation can be used, as a practical matter, without establishing and substituting values for the variables expressed therein. Substitution of values dictated by the formula has thus been viewed as a form of mathematical step. If the steps of gathering and substituting values were alone sufficient, every mathematical equation, formula, or algorithm having any practical use would be per se subject to patenting as a "process" under 101.
> Consideration of whether the substitution of specific values is enough to convert the disembodied ideas present in the formula into an embodiment of those ideas, or into an application of the formula, is foreclosed by the current state of the law.

These rejections can be remedied by bringing the algorithm into the technological arts. Examiner respectfully suggest including the phrase like "Computer implemented method for emulation execution of legacy instructions..." in preamble. For the second rejection examiner respectfully suggests providing a concluding step that completes the emulation execution process. Further, providing the steps that connect the step of identifying the modified instruction data with the emulation execution process.

Claims 2-10 are rejected based on their dependency on claim 1.

To expedite a complete examination of the instant application the claims rejected under 35 U.S.C. § 101 (nonstatutory) above are further rejected as set forth below in anticipation of applicant amending these claims to place them within the four statutory categories of invention.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. **Claims 1-3, 6-7, 11-12, 13-14 & 17-18 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,516,295 issued to George A. Mann et al (Mann '295 hereafter).**

Regarding Claim 1

Mann '295 teaches method for dynamic emulation of target (legacy) instruction by accessing the target (legacy) instruction (Mann '295: Col.2 Lines 44-46, Col.6 Lines 11-12). Further, Mann '295 teaches for each target instruction is translated to one or more host code blocks (Mann '295: Col.5 Lines 58-62). Further, Mann '295 teaches setting a flag/tag when an operand setting instruction is encountered, indicating that the value is not present in the translated code (Mann '295: Col.9 Lines 20). Further, Mann '295 teaches checking if the flag is set in an operand-using instruction (Mann '295: Col.9 Lines 1-9). Mann '295 teaches suspending the translation of operand-using instruction, splitting the translated code block into two - up to (before) the point where operand setting instruction is encountered. In next step executing the operand setting instruction and then continuing to translate the remaining block (Mann '295:

Col.7 Lines 14-37;Col.9 Lines 21-36). Mann '295 teaches translation continues when flag is not set (Mann '295: Col.9 Lines 18-20; Fig. 3 & 5).

Regarding Claim 2 & 3

Mann '295 anticipates same functionality as "resume_translation call" by splitting the code block into two blocks, allowing the execution of the first block (by host) as translated before and interpreting the second block, so that the operand using instruction is translated after the operand setting instruction is executed (Mann '295: Col.9 Lines 37-52; Col.7 Lines 4-12). Hence the resume_translation call is inherent in the design.

Regarding Claim 6 & 7

Mann '295 teaches bypassing the checking if there is no store instruction data (Mann '295: Fig. 5 Element 134/136 & 148). Further, Mann '295 teaches operand-using instructions employing fixed length operands (Mann '295: Fig. 3 Element 76).

Regarding Claim 11

Claim 11 discloses same limitations as claim 1 and is rejected for the same reasons as claim 1.

Regarding Claim 12

Mann '295 teaches an apparatus and a method for emulating dynamic execution of legacy instructions. Hence, system claim 12, disclosing same limitations as claim 1, is rejected for the same reasons as claim 1.

Regarding Claims 13 & 14

Claims 13 & 14 disclose same limitations as claim 2 & 3 respectively and are rejected for the same reasons as claim 2 & 3.

Regarding Claims 17 & 18

Claims 17 & 18 disclose same limitations as claim 6 & 7 respectively and are rejected for the same reasons as claim 6 & 7.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 4-5, 8-10, 15-16 & 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,516,295 issued to George A. Mann et al (Mann '295 hereafter) in view of U.S. Patent No. 5,560,013 issued to Casper A. Scalzi et al (Scalzi '013 hereafter).

Regarding Claim 4, 5 & 8

Teaching of Mann '295 is disclosed in claim 1 rejection above.

Mann '295 does not teach unpredictable operand using instructions like MVC instruction for IBM S/390 embodiment disclosed in the specification [0031].

Scalzi '013 teaches an instruction set emulation of S/390 (CISC based processor) on PowerPC (RISC based processor), similar to the one disclosed by the applicant. Since the MVC-like operand-using instructions for IBM S/390 were known

in the art at the time Scalzi '013 teachings were provided; translation of all legacy instructions from IBM S/390 to RISC based processor would have been obvious and necessitated in Scalzi '013 design.

It would have been obvious to one (e.g. a designer) of ordinary skill in the art at the time the invention was made to apply teachings of Scalzi '013 to Mann '295 to translate legacy operand-using legacy instructions containing variable length operands with different byte alignments. The motivation to combine would have been that Mann '295 and Scalzi '013 are analogous arts solving the problem of dynamic binary translation from CISC instruction set architecture to RISC-based architecture (Scalzi '013: Col.17 Lines 54-57; Mann '295: Col.3 Lines 62-67).

Regarding Claim 9

Both, Scalzi '013 & Mann '295 teach, that the legacy instructions are object code instructions compiled and assembled for legacy architecture (Scalzi '013: Col.4 Lines 37-46; Mann '295: Col.2 Lines 44-51).

Regarding Claim 10

Scalzi '013 teaches that the translated instructions are for execution in a PowerPC architecture, which is a RISC-based architecture (Scalzi '013: Col.17 Lines 54-57).

Regarding Claims 15 & 16

Claims 15 & 16 disclose same limitations as claim 4 & 5 respectively and are rejected for the same reasons as claim 4 & 5.

Regarding Claim 19

Claim 19 discloses same limitations as claim 8 and is rejected for the same reasons as claim 8.

Regarding Claim 20

Claim 20 discloses same limitations as claim 9 and is rejected for the same reasons as claim 9.

Regarding Claim 21

Claim 21 discloses same limitations as claim 10 and is rejected for the same reasons as claim 10.

Remarks

6. All claims are rejected.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Akash Saxena whose telephone number is (571) 272-8351. The examiner can normally be reached on 8:30 - 5:00 PM M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jean R. Homere can be reached on (571)272-3780. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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June 27, 2005

JEAN R. HOMERE
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